Magnatech™

INFORMATION SHEET

HOW THE MAGNATECH SYSTEM WORKS

Let's start by thinking about how combustion in a boiler typically occurs, when a Magnatech unit is not present.

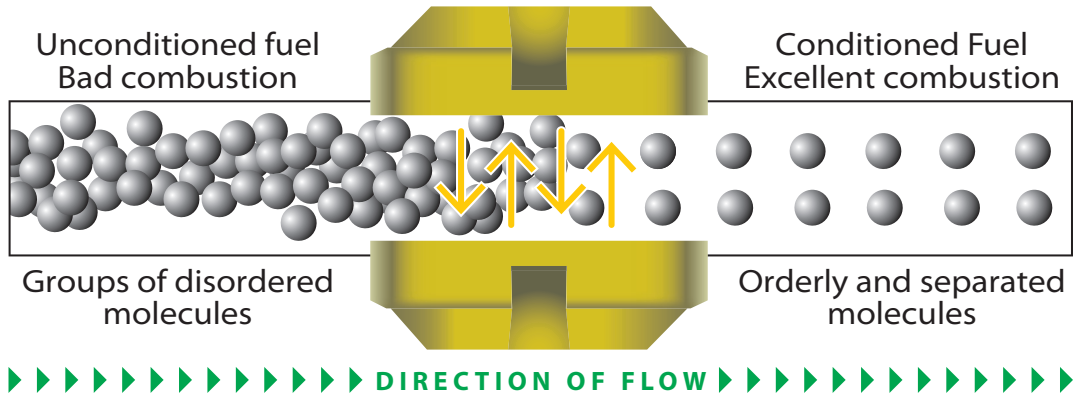
To achieve combustion of the fuel (gas, oil or LPG) supplied to our boiler, and to therefore get the release of heat that we want, it requires the fuel molecules going into the boiler's burners to meet with, and react with, oxygen molecules from the air supply also coming into the boiler. However, under normal circumstances, the molecules of hydrocarbon fuel flowing into your boiler will generally be clustered together in random, jumbled clumps due to intermolecular attractive forces between them, known as London forces. Consequently, many fuel molecules remain stuck inside their clusters and never get to meet with, let alone react with, an oxygen molecule. This makes combustion of all the individual fuel molecules entering the boiler far from guaranteed. The result is haphazard and inefficient combustion.

However, in recent years, a number of academic research teams across the world have studied the effects of using very strong magnets on hydrocarbon fuel feed-pipes and have published their findings.* They have discovered several key benefits, which apply to all hydrocarbon fuels.

Firstly, as the clusters of fuel molecules flow through the intense magnetic field, these clusters get broken up, with the individual fuel molecules tending to align themselves in a more orderly pattern. This then means that each individual fuel molecule has a much higher chance of meeting with and reacting with an oxygen molecule when it reaches the boiler's burners.

Secondly, the intense magnetic field also stretches the carbon-hydrogen bonds within each hydrocarbon fuel molecule. This stretching makes these bonds weaker and much more likely to break and react with an oxygen molecule when they are exposed to the heat of the boiler's burners.

EFFECT OF THE MAGNETIC FIELD OVER THE FUEL MOLECULES



These two beneficial effects of the intense magnetic field mean that many more of the fuel molecules entering the boiler will readily react (i.e. combust) with oxygen molecules. This leads to more heat being released in the boiler and consequently a hotter flame. (This rise in temperature is well within the boiler's operating tolerances).

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There are two very helpful outcomes from achieving a hotter flame during the combustion process, both verified by the published research findings.

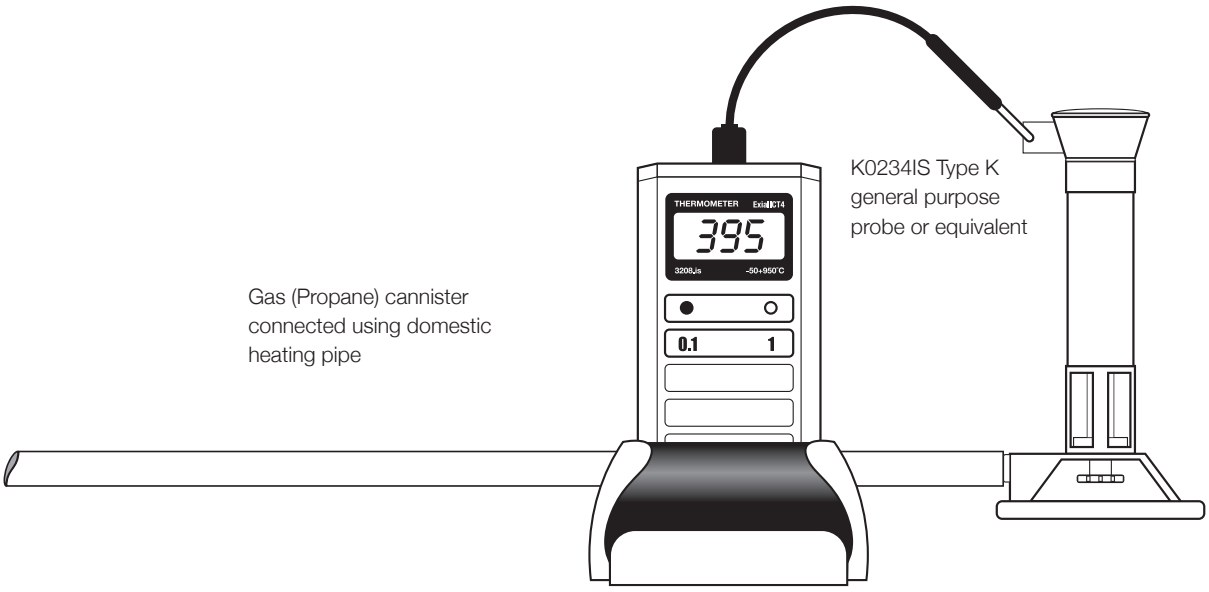
One, a hotter flame means that for the same physical amount of fuel going into the burner, more heat output is achieved. Or to put it in the context of your boiler at home, because the flame is hotter, less fuel is needed to heat the water in your boiler to the same temperature, therefore costing you less money to keep your hot water tank and central heating system at the same temperature as before.

Two, a hotter flame means that the fuel burns more completely in the burner. This means that less of the fuel molecules are left unburned or partially burned. Partial burning is not good as it yields noxious gaseous by-products, including carbon monoxide, nitrogen monoxide and other nitrogen oxides. In contrast, more complete combustion results in less pollution being vented from the boiler flue which is obviously much better for localised ground-level pollution and also for atmospheric pollution as a whole.

Increased flame temperature

Using the following equipment this simple experiment can be used to demonstrate the increase by measuring the difference in flame temperature with and without the Magnatech unit installed:

Without The Magnatech Unit Installed



A BURN TEMPERATURE OF 395°C IS ACHIEVED.

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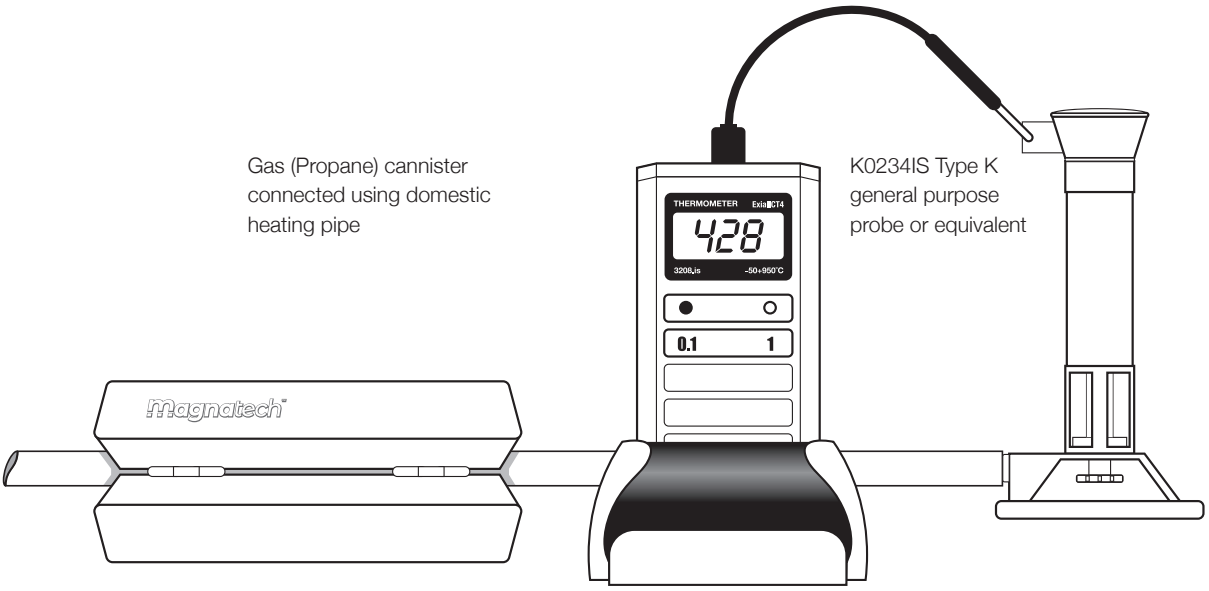
HOW THE MAGNATECH SYSTEM WORKS

With The Magnatech Unit Installed



Magnatech hinged Energy Saving Unit.

Digitron 3208IS Intrinsically Safe Digital Thermometer or equivalent.

Eisco™ High Temperature Bunsen Burner or equivalent

A BURN TEMPERATURE OF 428°C IS ACHIEVED.

This represents an increase in flame temperature of 8.35% using the following calculation.

[428 - 395 = 33] then [33/395x100= 8.35%]

Interestingly, the researchers found in their experiments that the stronger the magnetic field experienced by the fuel molecules, the more complete the combustion process was in the burner, with more heat being given out and with correspondingly lower levels of pollutants emitted.

These findings confirm that to get the best results from a Magnatech unit, it should be fitted as close to the fuel inlet point on your boiler as possible, and the magnet must be fully in contact with the fuel pipe. This will then ensure that the fuel molecules in the feed-pipe experience the strongest magnetic effect at the point when they are about to enter the boiler, thus achieving the maximum possible improvement in combustion efficiency for your boiler.

To summarise, with a Magnatech unit installed, your boiler will run more efficiently, i.e. with a hotter flame and more cleanly, resulting in less pollution and, crucially, reducing your fuel bills.

**For anyone interested, relevant research papers can be found at www.ResearchGate.net*

Source: The Schools Energy Project (https://schoolsenergyproject.org.uk

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